

North Umpqua Watershed Holistic Restoration Strategy

Written collaboratively by the Umpqua National Forest, Bureau of Land Management Roseburg District, and the National Forest Foundation



Our Vision

Federal lands in the North Umpqua Watershed will sustain naturally functioning ecosystems that are resilient to climate change and provide essential ecosystem services. We will achieve this in part through meaningful partner engagement to help define and implement integrated, holistic restoration activities informed by science and monitoring.

Geographic Setting & Scope

• Ecological Context •

Located at the transition between the wet western Oregon climate of the north and the dry southern Oregon climate, vegetation of the North Umpqua Watershed reflects characteristics of both of those regions. Lush, green conifer-dominated forests can be found near Oregon white oak, sugar pine, and ponderosa pine, and mixed in throughout are rare and endemic plants perfectly suited to this vegetation transition zone.



Geology also drives diversity within the watershed. The young High Cascades basalts, andesites, and pumice transition downriver to the older weathered Western Cascades volcanics, and even mix with ancient Klamath granitic and ultramafic rocks in the Little River drainage. These features help create diverse habitats that support over 250 wildlife species including elk, deer, black bear, mountain lion, wolves, owls, eagles, osprey, and peregrine falcons, to name a few ([Halofsky, Peterson and Gravenmier, eds., 2017](#)).

A broad suite of native fish species calls this river home, from threatened Coho salmon to the recently rediscovered Umpqua chub ([Penaluna and Ellenburg, 2019](#)). Chinook salmon, steelhead trout, coastal cutthroat trout, Pacific lamprey, and pikeminnow also make the North Umpqua River and tributaries their home.

Wildfires and periodic floods continue to reshape the ecological landscape of the North Umpqua Watershed. Large patches of high-severity fire in 2020, and the more mosaiced burns of 2021 and previous years, have altered the ecological setting. Major floods of 1964 and 1996-97 caused extensive damage to infrastructure but have also reset important stream processes. These events remind us that forests and rivers in the North Umpqua Watershed are dynamic and ever changing.

• Cultural & Social Context •

The North Umpqua Watershed is part of the ancestral homelands of the Yoncalla Kalapuya, the Southern Molalla, and the Upper Umpqua who have carried out their life-sustaining practices in the Umpqua Basin since time immemorial. These Indigenous peoples are now part of three federally recognized Tribal Nations: The Cow Creek Band of Umpqua Tribe of Indians, the Confederated Tribes of the Grand Ronde, and the Confederated Tribes of Siletz Indians. We commit to listening and learning from these native peoples and to meaningfully involving them in restoration planning and projects. The restoration actions taken as a result of this plan will support continued traditional values and uses across this landscape.

The communities of Idleyld Park, Glide, Dry Creek, Diamond Lake, Toketee, Peel, Sutherlin, and Roseburg consider the North Umpqua their backyard. The watershed provides diverse recreation opportunities, as well as key ecosystem services to the communities such as drinking water, timber products, electricity generation, and more. In 1988, Congress designated 33.8 miles of the North Umpqua River as Wild and Scenic based on its “outstanding remarkable values” of fish, water, recreation, scenery, and cultural resources. The recently signed Frank and Jeanne Moore Wild Steelhead Special Management Area Designation Act of 2019 adds to protection of critical fish habitat in the 100,000-acre Steamboat Creek Watershed.

• Environmental Stressors •

While the North Umpqua Watershed is an incredible place, that does not preclude the need for habitat restoration and climate adaptation. As waters warm due to increased air temperatures and reduced snowpack results in lower summer flows, continuing to

Recreation Highlights

- Fly fish for wild steelhead
- Mountain bike the North Umpqua Trail
- Drive the Scenic Byway along the Wild and Scenic River corridor
- Hike to one of the many waterfalls
- Engage in painting, nature photography, and birding
- Raft, kayak, or swim in the North Umpqua River
- Enjoy a winter recreation playground at Mt. Bailey and Diamond Lake
- Climb to the top of Mt. Thielsen
- Backpack the Pacific Crest Trail
- Hunt for black-tailed deer, elk, black bear, grouse, or mushrooms
- Search for rare wildflowers in rocky meadows
- Camp at Diamond Lake on the way to exploring Crater Lake National Park

protect and improve habitat to keep fish populations strong is increasingly important. Invasive, predatory fish such as smallmouth bass, which thrives in warm water habitats, exist in lower sections of the North Umpqua River and the mainstem Umpqua and could migrate upstream if water temperatures continue to increase. Smallmouth bass pose a threat to native fish, especially Pacific lamprey ([Jones et al., 2020](#)).

PacifiCorp's North Umpqua Hydropower Project, built between 1947 and 1956, has impacted aquatic and terrestrial habitats through reduced connectivity. Fish and other aquatic organisms cannot move freely through parts of the river system. Specifically, Slide Creek Dam blocks passage to 1.4 miles of anadromous habitat. On the terrestrial side, powerlines, canals, and roads have impacted habitat.

Legacy land management practices have also amplified environmental stressors across this landscape. "Stream cleaning" or removing large wood from streams eliminated key aquatic habitat and altered stream processes. Cutting large conifers next to streams reduced future wood inputs, increased erosion, and reduced shade, which has led to increasing stream temperatures. Logging old growth, establishing uniform plantations, and excluding fire have led to overstocked stands that are at a high risk of stand-replacing fire. Overstocked and young stands also transpire more water than mature stands with lower densities, which can reduce summer baseflows ([Perry and Jones, 2017](#)). These legacy impacts continue to affect the forest and watershed today. The Archie Creek Fire in September 2020, which burned more than 130,000 acres, acts as a reminder of the urgent need to make this watershed more resilient to wildfire and adaptive to a changing climate.

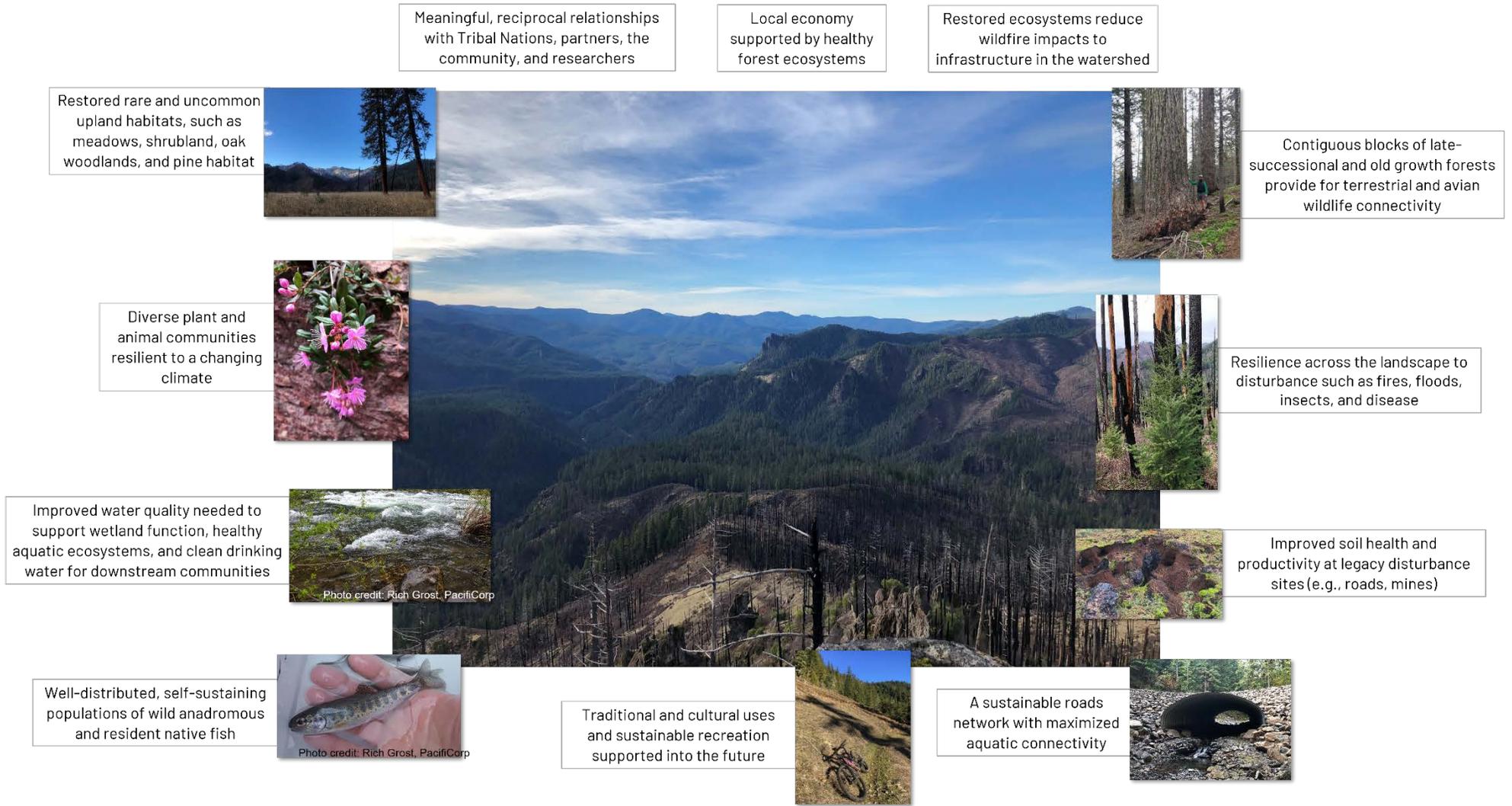
Fire exclusion has also resulted in conifer encroachment of unique upland habitats such as oak woodlands, dry mixed conifer/pine forests and associated hardwood species, meadows, and mountain shrub communities. Wildlife and pollinators rely on these unique habitats, and they provide high levels of native plant diversity. Additionally, loss of meadow habitats can impair water holding capacity to sustain summer flows. Invasive plants are also colonizing these unique habitats and outcompeting native plants. Five-needle pines (sugar, western white, and whitebark pines) also suffer from blister rust and infestations of mountain pine beetle ([Goheen and Goheen, 2014](#)). Due to lack of fire as well as the increased amounts of stand replacement fire, many of these habitats and associates are becoming increasingly rare.

Sediment entering streams from gravel and native surface roads pose a threat to water quality and fish. The Forest Service road network was largely built before 1980 to facilitate a very active old-growth logging program. Since then, logging practices, land management priorities, and funding levels have led to an unsustainable forest roads network in much of the North Umpqua Watershed. These roads receive infrequent maintenance and have culverts and drainage features that have failed or are at risk of failing, which can lead to large amounts of sediment entering streams and harming aquatic life.

These environmental stressors highlight the need for climate change adaptation and restoration of ecological processes and functions across the North Umpqua landscape in all habitat types.

Desired Conditions

Achieving the following desired conditions will result in an ecosystem that supports the multiple use mission on our federal public lands so current and future generations can enjoy the benefits of the North Umpqua Watershed.



Geographic Focus Areas and Strategic Actions

While this is a long-term vision, we must begin with short-term actions to make progress. The Umpqua National Forest, Bureau of Land Management Roseburg District, and the National Forest Foundation have identified six focus areas for the next five years. Strategic projects may also occur outside of these focus areas. We organized these in a table with areas where we are already implementing projects at the top, and areas that are primarily in planning stages at the bottom. Strategic actions for Rock Creek and Calf-Copeland-Deception are at quantifiable stages because the agencies have completed NEPA planning. Other watersheds have some metrics but require additional planning to fully quantify restoration actions. Restoration plans in the Archie Creek Fire footprint are evolving as we continue to better understand the impacts of the fire. For that reason, we have left out metrics as we expect they will change. We have not included the Jack and Rough Patch Fires as focus areas because they were primarily low to moderate intensity, and much of those fire footprints lay within watersheds already covered in this strategy.

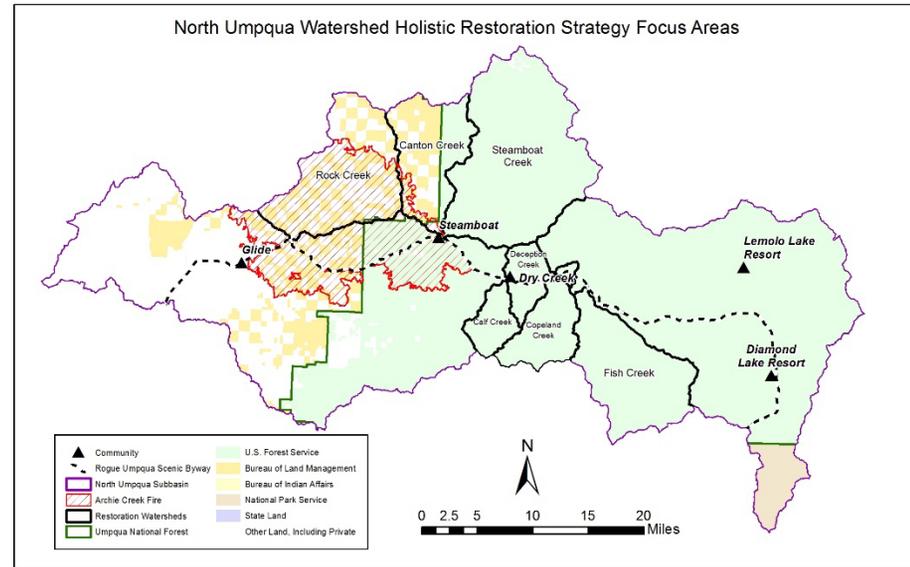
Geographic Focus Area	Rationale for Focus
Archie Creek Fire Footprint <i>Umpqua NF & BLM managed lands</i>	<ul style="list-style-type: none"> • Historic, stand-replacing fire • Public interest and concern • Need to recover recreation sites and public recreational access
Rock Creek Watershed <i>BLM managed lands</i>	<ul style="list-style-type: none"> • Existing watershed-scale plan • Archie Creek Fire recovery • Anadromous fish habitat • Substantial restoration has already occurred throughout BLM and private lands
Calf, Copeland, and Deception Creeks Sub-Watersheds <i>Umpqua NF managed lands</i>	<ul style="list-style-type: none"> • NEPA complete: Calf-Copeland Restoration Project • Priority watersheds in Watershed Condition Framework (WCF) • Unique upland habitats in need of restoration (pine, oak, rare plants, wildfire resiliency of late seral forest) • Anadromous fish habitat • Need for a sustainable road network
Steamboat Creek Watershed <i>Umpqua NF managed lands</i>	<ul style="list-style-type: none"> • NEPA in process: Moore Steamboat Restoration • Frank & Jeanne Moore Wild Steelhead Special Mgt Area – stronghold for North Umpqua summer steelhead • Anadromous fish habitat • Priority watershed in WCF • Need for a sustainable road network • Intact Late Successional Reserve forests
Canton Creek Watershed <i>Umpqua NF & BLM managed lands</i>	<ul style="list-style-type: none"> • Opportunity for cross-boundary restoration (BLM, USFS, private) • Regional Aquatics Environmental Analysis (EA) in place for USFS managed lands • Programmatic Restoration EA in place for BLM managed lands • Anadromous fish habitat
Fish Creek Sub-Watershed <i>Umpqua NF managed lands</i>	<ul style="list-style-type: none"> • Key pine, oak, and shrubland restoration opportunities and need for wildfire resiliency • Key big game winter range habitat • Cold-water refugia and anadromous fish habitat

Archie Creek Fire Footprint Strategic Actions:

- Plant conifers where seed source has been lost, particularly in Riparian Reserves, to accelerate forest recovery and restore five-needle pines
- Plant riparian areas with diverse shrub and hardwood species and control invasive species with the involvement of tribal and community partners
- Replace undersized culverts with infrastructure that allows for aquatic organism passage
- Add log structures to streams to create habitat, capture gravel, and restore stream conditions
- Reopen recreation areas after replacing burned infrastructure and ensuring visitor safety
- Rehabilitate upland areas with native grasses and forbs to help reestablish wildlife foraging habitat

Calf, Copeland, and Deception Creeks Sub-Watersheds Strategic Actions:

- Decommission or place in storage 24 miles of roads to improve water quality
- Treat fuels through underburning and shaded fuel breaks on 1,218 acres
- Non-commercially thin 282 acres to restore oak and pine habitat and improve wildfire resiliency
- Commercially thin 1,759 acres to restore pine health and improve wildfire resiliency
- Commercially thin plantations and create gaps across 1,210 acres to restore pine habitat and improve wildfire resiliency
- Commercially thin 451 acres of young plantations to support creation of late seral habitat conditions on the landscape
- Non-commercially thin 194 acres of young stands to improve stand health and resiliency to wildfire
- Improve instream habitat by placing logs in eight miles of streams in these sub-watersheds



- Restore four acres of wetland habitat
- Include Tribal and community partners in restoration work like wetland restoration, biochar creation & native plantings

Rock Creek Watershed Strategic Actions:

- Restore six miles of stream habitat by:
 - Reconnecting 60 acres of floodplains
 - Reconnecting two and a half miles of existing side-channels
 - Constructing 13,200 feet of groundwater channels and pools
 - Adding 15 channel-spanning log jams and 50 smaller log jams (1300 whole trees)
- Create post-fire resiliency in Rock Creek through the restoration actions above which will capture gravels, wood, and other debris
- Involve youth and community volunteers in post-fire riparian revegetation

Steamboat Creek Watershed Strategic Actions:

- Maintain up to 120 miles of forest road to improve drainage, which will restore hydrologic function of adjacent streams, seeps and springs, reduce road surface erosion, and address stream crossing failure risks
- Decommission or place in storage five and a half miles of roads to improve water quality in the Middle and Upper Steamboat sub-watersheds
- Thin plantation stands with prescriptions designed to achieve Late Successional and Riparian Reserve objectives
- Implement 12 miles of instream habitat restoration including both large wood placement and gravel augmentation

Canton Creek Watershed Strategic Actions:

- Identify and implement cross-boundary aquatic restoration projects on up to eight miles of streams potentially including

large wood placement, floodplain reconnection, and riparian plantings to add diversity

- Identify forest roads where improved drainage is needed to restore hydrologic function of adjacent streams, seeps and springs, reduce road surface erosion, and address stream crossing failure risks
- Remove or replace four culverts to improve aquatic organism passage

Fish Creek Sub-Watershed Strategic Actions:

- Restore landscape vegetation patterns
- Create resiliency to wildfire
- Improve watershed and forest health
- Restore legacy pine stands
- Improve wildlife habitat
- Improve stream habitat

Partner Engagement and Communication, and Public Outreach

The partnership potential in the North Umpqua Watershed is incredible. We intend to continue working with current partners while also expanding to those not traditionally included in watershed restoration and land management. This includes reaching out to potential partner organizations and the general public. Ecological restoration in the North Umpqua Watershed will be more successful if we fold the social context into our planning and actions because ecological and social systems are inherently intertwined ([Dunham et al., 2018](#)). Urgent restoration needs in this watershed are greater than the federal land management agencies can accomplish on their own. For that reason, we are seeking to include partners in this work to bring in creative thinking, unique approaches, and additional capacity.

We recognize that meaningful partner engagement takes time. We will put in the work to reach that goal through these concrete actions:

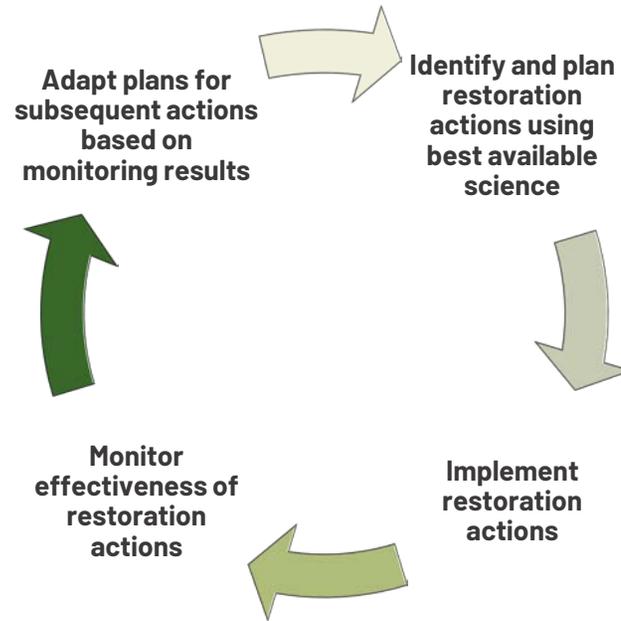
- Identify new partnership opportunities through an inclusive lens;
- Communicate consistently with partners and the public, including both sharing information and listening;
- Work with researchers so that current science informs restoration plans;
- Collaborate with partners to identify and plan restoration projects;
- Increase positive impact by coordinating efforts across land management boundaries;
- Build local capacity for implementing restoration projects;
- Support partners in applying for grants from the North Umpqua Hydropower Federal Mitigation fund; and
- Utilize the National Forest Foundation to increase capacity to coordinate partnerships.

Adaptive Management

We will utilize the best available science to inform our restoration actions while also conducting project effectiveness monitoring to ensure we are achieving the desired objectives. Monitoring will tie back to overall objectives, will be efficient, targeted, and meaningful, and will be applied to future decisions. For some projects, we will incorporate basic effectiveness monitoring into project design. For more complex or novel projects, we will seek involvement from the research community to help design and implement in-depth monitoring. Here are three current examples of research partnerships that inform adaptive management within the planning area:

- *Forest health monitoring:* To assess the effectiveness of pine restoration actions in Calf-Copeland, the Umpqua National Forest is partnering with the Pacific Northwest Research Station and Umpqua Community College to conduct statistically rigorous monitoring of pine health throughout the project area. This data collection is targeted to inform future restoration actions.
- *Aquatic monitoring:* The BLM, Partnership for Umpqua Rivers, and the National Aquatic Monitoring Center at Utah State University have come together in the Rock Creek Watershed to monitor the effectiveness of stream restoration actions and the stream response to the Archie Creek Fire. They will be looking at primary and secondary productivity, as well as other stream and riparian conditions.
- *Wildlife monitoring:* The Umpqua National Forest and Oregon Department of Fish and Wildlife are collaborating to monitor elk habitat usage. By observing what areas elk occupy, they can determine if restoration activities are meeting the intended goals of maintaining winter range for big game species.

Many other monitoring and research projects are occurring within the North Umpqua Watershed. As relevant we will work with these researchers to learn from their work and apply it to restoration planning and implementation.



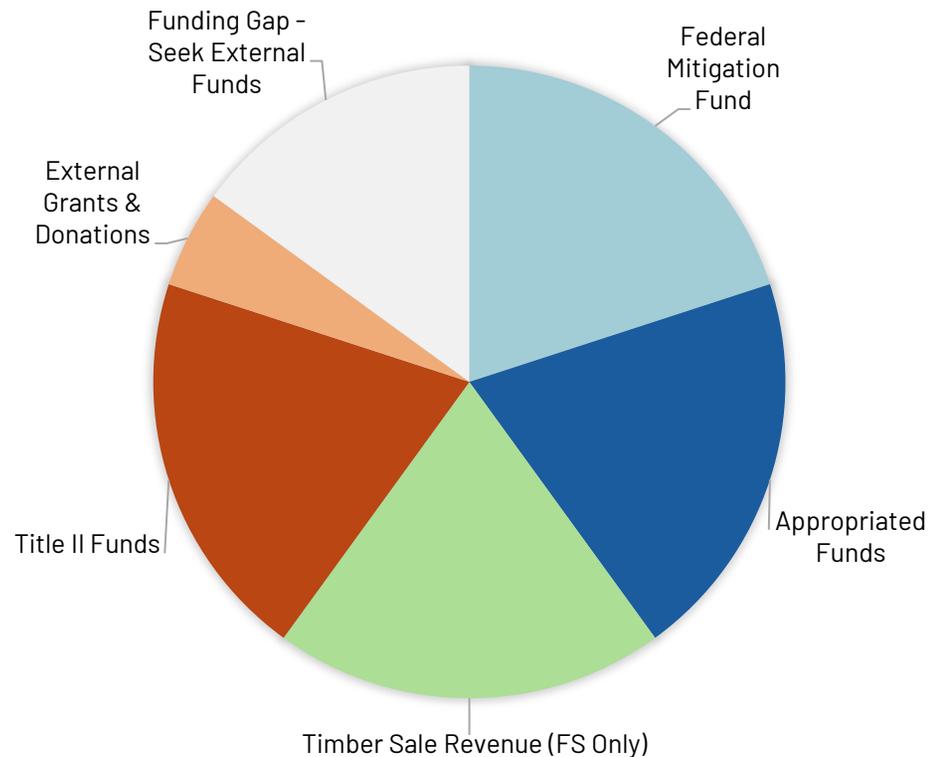
Funding

Several funding opportunities are available to achieve the desired conditions described in this strategic plan. The Forest Service and BLM both have access to funding through federal appropriations and Title II of the Secure Rural Schools and Community Self-Determination Act. The Forest Service has access to timber sale revenue. The North Umpqua Hydropower Federal Mitigation Fund provides a unique funding opportunity through 2038. The Federal Mitigation Fund is a component of the *North Umpqua Hydroelectric Project Settlement Agreement* (June 2001) for the Federal Energy Regulatory Commission issued license for PacifiCorp’s hydropower project. It provides funding for mitigating hydropower impacts to natural resources on USFS and BLM lands in the North Umpqua Watershed that are not otherwise mitigated by the Settlement Agreement actions. (For more information on the Federal Mitigation Fund, please see our companion document entitled, “*North Umpqua Hydropower Federal Mitigation Fund: Appropriate Uses and Hydropower Impacts*”.)

We will ensure those funds stay focused on mitigating the impacts of the hydropower project. The Federal Mitigation Fund is primarily used for implementing restoration projects, while a small proportion of its funds are used for monitoring and staff time for planning. At the same time, we plan to strategically use the Federal Mitigation Fund to leverage external resources to expand the benefits of our restoration efforts.

This funding chart represents the conceptual pieces of the pie available to work toward holistic restoration of the North Umpqua Watershed. It does not represent actual amounts nor relative amounts, though we hope to share that in the future. The current intention is to show the types of funding we can use for restoration and that we have a gap to fill. We have not yet fully tapped into external resources and so we can fill that gap through working with partners to pursue local, state, federal, and foundation grants, as well as private donations.

Restoration Funding Sources



We hope you will join us in this important work of restoring the North Umpqua Watershed!